PB90-178104

Superfund Record of Decision (EPA Region 2)
Picatinny Arsenal, NJ. (First Remedial Action), September 1989

(U.S.) Environmental Protection Agency, Washington, DC

28 Sep 89

U.S. Department of Commerce
National Technical Information Service
NTIS

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Picatinny Arsenal is a munitions and weapons research and development installation covering 6,491 acres and containing 1,500 buildings in Morris County, near the city of Dover, New Jersey. Ground Water contamination above State and Federal action levels has been detected in the vicinity of Building 24, where past wastewater treatment practices resulted in the infiltration of metal plating waste constituents (i.e., VOCs and heavy metals) into the ground water. Two unlined lagoons alongside Building 24, thought to be a source of contamination, was eliminated during a 1981 action during which the unlined lagoons were demolished, contaminated soil removed, a two concrete lagoons installed. Two additional potential sources of contamination are a dry well at Building 24 and a former drum storage area at Building 31, directly across the street from Building 24. This interim ground water cleanup remedy is designed to prevent deterioration to Green Pond Brook, a major drainage artery onsite, while the Arsenal as a whole is evaluated. The primary contaminants of concern affecting the ground water are VOCs including TCE, and metals.

The selected interim remedy for this site includes ground water pumping and treatment using a pretreatment system for the removal of metals and solids and air stripping to remove VOCs; GAC filtration of VOCs from the air stripper exhaust and air stripper effluent; discharge of treated ground water to Green (Continued on next page)

17. Document Analysis a. Descriptors

Record of Decision - Picatinny Arsenal, NJ
First Remedial Action
Contaminated Medium: gw
Key Contaminants: VOCs (TCE), metals

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 85
	20. Security Class (This Page) None	22. Price A05

EPA/ROD/R02-89/093
Picatinny Arsenal, NJ

16. Abstract (Continued)

Pond Brook; and effluent and air monitoring. Cost data was not provided because USACE was preparing to offer a competitive bid contract for the system.

PB90-178104

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R02-89/093
September 1989

EPA

Superfund Record of Decision:

Picatinny Arsenal, NJ

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VA. 22161

ROD Fact Sheet

Site
Name - Picatinny Arsenal
Location - Morris County, New Jersey
HRS score - 42.92 (Proposed on July 14, 1989)
NPL rank - Group 7

ROD
Date Signed -
(Interim) Remedy - ground water pump and treat system
Capital Cost - $2,000,000
O & M /year - $500,000
Present worth -

LEAD
Remedial/Enforcement - Federal facility
EPA/State/PRP - Army
Primary Contact - Jeff Gratz (212) 264-6667
Secondary Contact - Robert Wing (212) 264-8670
Main PRP - Army
PRP Contact - Tom Solecki (201) 724-5818

WASTE
Type - TCE
Medium - ground water
Origin - old land disposal unit, dry well, and USTs
Est. quantity - ground water plume length: 1,600 ft.
width: 400 - 800 ft.
depth: 50 ft.
highest conc.: 25,000 ppb.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

30 OCT 1989

30 Oct 1989

MEMORANDUM THRU THE ASSISTANT CHIEF OF ENGINEERS

FOR THE COMMANDER, U. S. ARMY MATERIEL COMMAND

SUBJECT: Picatinny Arsenal's Record of Decision (ROD) Declaration, Interim Remedial Response for Building 24 Area

The subject ROD declaration has been approved and signed.

Point of contact in this office is Mr. Rick Newsome, ext. 49531.

Lewis D. Walker

Lewis D. Walker
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I,L&E)

Attachment

cf:
SAGC
DAJA-EL
ENVR-E

AMCEN-A (ASA/30 Oct 89) 1st End Mr. King/AV 284-9016
SUBJECT: Picatinny Arsenal's Record of Decision (ROD)
Declaration, Interim Remedial Response for Building 24 Area

5 DEC 89

CDR, USAMC, 5001 Eisenhower Ave., Alex, VA 22333-0001

FOR Commander, U.S. Army Toxic and Hazardous Materials Agency,
ATTN: CETHA-IR, APG, MD 21010-5401

1. Copy of subject signed record of decision is enclosed for your retention. The original is transmitted directly to ARDEC via copy of this endorsement.

2. Point of contact at AMCEN-A is Robert King, AV 284-9016.

FOR THE COMMANDER:

for Andres M. Bertos

ANDRES TALTS, P.E.
Chief, Environmental Quality Division
Office of the Deputy Chief of Staff
for Engineering, Housing, and
Installation Logistics

CF:
Commander, U.S. Army Armament Research Development and
Engineering Center, ATTN: SMCAR-ISE-N, Dover, NJ 07801-5001

DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY MATERIEL COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA 22333-0001

AMCEN-A (200-1c)

25 OCT 89

MEMORANDUM THRU COL R. ~~MASHBURN, DIRECTOR, ARMY ENVIRONMENTAL OFFICE,~~ for Jeff Jones, CSC, ms
WASH DC 20310-2600

FOR MR. LEWIS D. WALKER, DASA (ESOH), WASH DC 20310-0103

SUBJECT: Picatinny Arsenal's Record of Decision (ROD) Declaration, Interim Remedial Response for Building 24 Area

1. The subject ROD declaration is provided for your approval and signature. An advanced copy of the package was provided earlier to your office directly by the installation.

2. No comments were received during the 25 Sep 89 public meeting. The comment received from the Army Environmental Office concerning the sampling and analysis of the treated water before discharge to the environment will be addressed during implementation, as appropriate. Final EPA and State concerns with the ROD are attached as part of the package. AMC concurs with the package as presented.

3. Request this office be advised on the expected date for approval and signature of this ROD.

4. The POC at HQAMC is Ms. Lydia Sanchez, 274-9016, and at the installation is Ms. Andrea Pastuck, AV 880-5818, Picatinny Arsenal's Environmental Affairs Office. The POC for legal issues is the Arsenal's Office of General Counsel.

FOR THE COMMANDER:

Encl

JERRY A. HUBBARD
Colonel, GS
Deputy Chief of Staff for
Engineering, Housing, and
Installation Logistics

AMCEN-A
SUBJECT: PICATINNY ARSENAL'S RECORD OF DECISION, INTERIM REMEDIAL RESPONSE FOR BUILDING 24 AREA

CF: (W/O ENCL)
COMMANDER,
AMCCOM, ATTN: AMSMC-ISE, AMSMC-GC(D)
ARDEC, PICATINNY ARSENAL, DOVER, NJ 07806-5000
ATTN: SMCAR-ISE, AMSMC-GC(D)
USATHAMA, ATTN: CETHA-IR-B (MS. MORAN)

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

REPLY TO ATTENTION OF

AMSMC-ISE (200-1a)

10 OCT 1989

MEMORANDUM FOR Commander, U.S. Army Materiel Command, ATTN: AMCEN-A, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001

SUBJECT: Picatinny Arsenal's Record of Decision (ROD) Declaration, Interim Remedial Response for Building 24 Area

1. Reference memorandum, HQ, AMC, AMCEN-A, datafaxed 28 Sep 89, subject as above.

2. Headquarters, U.S. Army Armament, Munitions and Chemical Command environmental staff have reviewed subject ROD and concur with it.

3. No legal review is required by AMSMC-GC (R) because authority for said legal review rests with AMSMC-GC (D) ← Picatinny's General Counsel. LBS

4. The point of contact for this action is Mr. William Coogan, AMSMC-ISE-E, AUTOVON 793-1435.

FOR THE COMMANDER:

William J. Coogan for
RONALD T. SHINBORI
Chief, Environmental Quality Div

DEPARTMENT OF THE ARMY
U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

REPLY TO ATTENTION OF

September 21, 1989

Environmental Affairs
Office

Mr. Robert King/Ms. Lydia Sanchez
Headquarters AMC
5001 Eisenhower Avenue
Alexander, VA 22333-0001

Dear Mr. King/Ms. Sanchez:

Enclosed please find a copy of the Record of Decision Declaration, Responsiveness Summary, Effluent Limitations, Record of Decision and Supporting letter from EPA for the Interim Groundwater Remediation of Picatinny Arsenal, Building 24 Study Area, Dover, New Jersey.

The public comment period was from 12 July - 11 August 1989. No significant comments were received. After the public comment period was closed, the EPA and the New Jersey Department of Environmental Protection requested a public meeting. A public meeting will be held on 25 September 1989. Request you forward this package to Mr. Walker's office for signature, and request that he sign the Declaration after 26 September 1989, due to the fact that an addendum may have to be added if there are any comments at the public meetings. If an addendum is required it will be forwarded on 26 September 1989. The EPA is fully behind this approach.

Should you have any questions regarding this package phase contact myself or Andrea Pastuck at 201-724-5818 or 724-2878.

Sincerely,

Thomas J. Solecki

THOMAS J. SOLECKI
Environmental Affairs
Office

Enclosure
As stated

CF:
Robert Lubbert ENVR-EH (w/ROD Declaration, Responsiveness Summary & EPA letter dated 3 August 1989)
Richard Newsome SAIL-ESOH (w/encl same as above)
Ronald Shimbori AMSMC-ISE (w/encl same as above)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

SEP 2 [illegible] 1989

Colonel Richard M. Gilligan, Jr.
Commanding Officer
U.S. Army Armament R & D Command
Picatinny Arsenal, NJ 07806-5000

Dear Colonel Gilligan:

This is to notify you, that, after reviewing the Army's Record of Decision and supporting documents for remediating a plume of contaminated ground water in the vicinity of Building 24 at Picatinny Arsenal, the United States Environmental Protection Agency (USEPA) concurs with the recommended remedy as stated, provided the remedy is designed to meet the effluent limitations and monitoring requirements specified by the New Jersey Department of Environmental Protection (NJDEP). This Army initiative will expedite clean up of an area of known contamination.

The Record of Decision is for an interim action which focuses on the remediation of ground water contamination emanating from the Building 24 area. This interim action is intended to control short term contaminant migration without specifying long term clean up levels. Picatinny Arsenal will conduct a formal Remedial Investigation/Feasibility Study (RI/FS) in 1990 which will evaluate all areas of known or suspected contamination at the Arsenal (including the Building 24 area). The RI/FS will include an assessment of this interim action in light of new data which will be collected and propose final actions (which will include source areas as well as soil and ground water contamination) for complete site remediation. Final actions will include contaminant specific clean up objectives. We believe that this interim action will be consistent with future remedial actions.

The ground water remediation will consist of the following components:

* extraction of contaminated ground water,
* pretreatment system for the removal of metals, solids, etc. from ground water,

* air stripper for removal of volatile organic compounds (VOCs) from ground water,
* granular activated carbon (GAC) filtration of VOCs from the air stripper exhaust,
* GAC filter for the removal of additional VOCs from the air stripper effluent (treated water),
* discharge of effluent via a holding tank and piping to Green Pond Brook,
* operation and maintenance of the system, and
* effluent and air monitoring.

EPA fully appreciates the environmental concern you have shown by taking this action. If you have any questions regarding the subject of this letter, please call me at (212) 264-2525, or Mr. Jeffrey Gratz, the facility Project Manager at (212) 264-6667.

Sincerely,

William J. Muszynski, P.E.
Acting Regional Administrator

cc: Christopher J. Daggett, Commissioner
New Jersey Department of Environmental Protection

Steve Anderson
New Jersey Department of Environmental Protection

Ed Kaup
New Jersey Department of Environmental Protection

Mr. Thomas Solecki, Picatinny Arsenal
Mr. Peter Rowland, Picatinny Arsenal

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CHRISTOPHER J. DAGGETT, COMMISSIONER
CN 402
TRENTON, N.J. 08625
609-292-2885

SEP 2 8 1989

Brigadier General Joseph Raffiani Jr.
Commanding Officer
US Army Armament R & D Command
Picatinny Arsenal, NJ 07806-5000

Dear General Raffiani:

This letter serves as formal notification that the New Jersey Department of Environmental Protection (Department) has reviewed the draft Record of Decision (ROD) as set forth in the Proposed Remedial Action Plan, dated September 12, 1989, prepared for the U.S. Army as an interim remedial action to control the migration of contaminated groundwater emanating from the Building 24 area at Picatinny Arsenal in Dover, New Jersey. The Department concurs with the selected remedial alternative.

This alternative will be comprised of:

- Extraction of contaminated groundwater
- Pretreatment system for the removal of metals, solids, etc.
- Air-stripping for removal of VOC's
- GAC filtration for removal of VOC's from the air-stripper exhaust
- GAC filtration for removal of additional VOC's from the air-stripper effluent (treated water)
- Discharge of treated water via a holding tank and piping to Green Pond Brook
- Operation and maintenance of system, and
- Effluent monitoring

This concurrence is based on the assumption that the Department's comments on the draft document and the Department's environmental guidelines and standards will be incorporated in the final document.

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The Department fully appreciates the importance of this Interim Record of Decision and will take all reasonable steps to ensure that the Departments' commitments are met.

Very truly yours,

Christopher J. Daggett

c William J. Muszinski, P.E.,
Acting Regional Administrator, USEPA
J. Gratz, Project Officer, USEPA
M. Dower, Chief, BFCM

RECORD OF DECISION DECLARATION
INTERIM REMEDIAL RESPONSE
FOR BUILDING 24 AREA

SITE: Picatinny Arsenal, Dover, New Jersey

STATEMENT OF BASIS AND PURPOSE:

This decision document presents the selected interim remedial action for the building 24 area, Picatinny Arsenal, Dover, New Jersey. This decision is based on the administrative record, which includes the following documents describing the analysis of the cost and effectiveness of interim remedial alternatives for the building 24 Area:

- Engineering Feasibility Study for Interim Groundwater Remediation at Picatinny Arsenal, Building 24 Study Area, Dover, New Jersey (ERC Environmental and Energy Services Co., Inc., April 1989).

- Section C - Description/Specifications/Work Statement for Groundwater Remediation System Installation and Operation at Picatinny Arsenal, Building 24 Study Area, Dover, New Jersey (ERC Environmental and Energy Services Co., Inc., June 1989).

- Draft Record of Decision and Environmental Assessment Report for Interim Remediation Plan, Building 24 Study Area, Picatinny Arsenal, New Jersey (ERC Environmental and Energy Services Co., Inc., May 1989).

- Develop Documentation/Prepare Remedial Action Concept Plan for Building 24 Contamination Plume at Picatinny Arsenal-Final Report (Engineering Technologies Associates, Inc., April 1989).

- Groundwater studies completed by U.S. Geological Survey, Trenton, New Jersey, 1986-1988.

DESCRIPTION OF SELECTED INTERIM REMEDY:

An interim remedial action has been selected to prevent deterioration of Green Pond Brook water quality. This action will minimize movement of the contaminated groundwater plume caused by past activities at Building 24 and the surrounding area. The alternative chosen consists of:

- extraction of contaminated ground water,
- pretreatment system for the removal of metals, solids, etc. from ground water,
- air stripper for removal of volatile organic compounds (VOCs) from groundwater,
- granular activated carbon (GAC) filtration of VOCs from the air stripper exhaust,

- GAC filter for the removal of additional VOCs from the air stripper effluent (treated water),
- discharge of effluent via a holding tank and piping to Green Pond Brook,
- operation and maintenance of the system, and
- effluent and air monitoring.

A Remedial Investigation Concept Plan is currently being prepared for the entire installation.

DECLARATIONS:

Consistent with the Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Contingency Plan (40 CFR Part 300), the interim remedial action described above, together with proper operation and maintenance, constitutes a cost effective interim remedy which mitigates and minimizes damage to public health, welfare, and the environment. The State of New Jersey and U.S. EPA have been consulted and agree with the approved interim remedy. A letter of concurrence will be provided by the EPA subsequent to approval by Mr. Walker.

We have determined that the action being taken is a cost effective treatment alternative, which reduces the volume of waste and provides an interim solution to the maximum extent practicable and will protect public health, welfare and the environment.

The Army will conduct a formal Remedial Investigation/Feasibility Study beginning in 1990, which will include an assessment of this interim remedial action in light of new data which will be collected and propose final actions for complete site remediation.

JAMES C. FIELDS
COL, OD
Acting Commander

LEWIS D. WALKER
Deputy for Environment, Safety and Occupational Health
Office of the Assistant Secretary of the Army (Installations and Logistics)

RECORD OF DECISION
FOR
INTERIM GROUNDWATER REMEDIATION PLAN
PICATINNY ARSENAL, NEW JERSEY

Prepared For:
U.S. Army Corps of Engineers
Huntsville Division -- CEHND-ED-PM
Contract No. DACA87-88-D-0079
Delivery Order 0005

Prepared By:
ERC Environmental and Energy Services Company
725 Pellissippi Parkway
P.O. Box 22879
Knoxville, Tennessee 37933

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FOREWORD

The Record of Decision was written to address points described in EPA's February 1989 "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites", EPA/G-88/003, OSWER Directive 9283.1-2 (Appendix C, Documenting an Interim Action).

1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

The US Army Toxic and Hazardous Materials Agency (USATHAMA) is preparing to perform CERCLA RI/FS activities at Picatinny Arsenal, New Jersey. This document is the US Army's Record of Decision (ROD) for selection and implementation of an interim groundwater remediation action at Picatinny Arsenal, New Jersey. A formal remedial investigation and feasibility study (RI/FS) is currently being planned. The final remedial action will be implemented following the RI/FS.

Groundwater contamination above State of New Jersey and Federal action levels has been detected in the vicinity of Building 24, where past wastewater treatment practices allowed the infiltration of metal plating waste constituents (volatile organic compounds and heavy metals) into the groundwater. Previous investigations conducted by the U.S. Geological Survey (USGS) have defined a contaminant plume that consists primarily of trichloroethylene (TCE). Picatinny Arsenal has elected to implement interim remedial measures, including groundwater treatment, rather than wait until the RI/FS activities are completed.

1.2 SITE DESCRIPTION

Picatinny Arsenal is located in north-central New Jersey in Morris County near the City of Dover. The installation, formally known as the U.S. Army Armament Research, Development and Engineering Center, employs approximately 6,400 people in research and development of munitions and weapons. The Arsenal covers 6,491 acres and contains more than 1,500 buildings serviced by approximately 85 miles of road.

The Arsenal property is approximately rectangular in shape, approximately 8.5 miles long by 1.5 miles wide. It is situated in

an elongated northeast-southwest trending valley bounded by Green Pond Mountain on the west, Green Pond Mountain and Copperas Mountain near northwestern border, and an unnamed ridge to the southeast. Green Pond and Copperas Mountains are characteristically rugged, rocky and steeply sloped with a maximum altitude of 1,200 feet above National Geodetic Vertical Datum of 1929 (NGVD of 1929). The southeastern ridge is not as rugged or steeply sloped and has a maximum altitude of 1,100 feet above NGVD of 1929. The valley is drained to the southwest primarily by Green Pond Brook. It has two manmade lakes--Lake Denmark and Picatinny Lake. The study area is located in the valley southwest of Picatinny Lake. The area is drained by a number of small brooks and drainage ditches in addition to Green Pond Brook. Topography is flat and generally at an altitude of 700 feet. Some parts of the area is swampy, prone to flooding, and generally underlain by organic-rich soil. In the developed areas, stony fill has been added to give support to structures.

1.3 SITE HISTORY

The Arsenal has a long history of manufacturing explosives, beginning in the mid-1800s. In 1908, it was designated a U.S. Army Arsenal. Picatinny Arsenal has been a site for the production of various munitions including cannon shot in its earlier days and, during the World War I, artillery ammunition bombs, high explosives and other ordnance. During World War II, 20,000 people were employed to produce artillery, ammunition, bombs, high explosives, pyrotechnics, and other ordnance items. The Arsenal was a major source of munitions for the Korean and Vietnam Conflicts. More recently, the Arsenal, officially known as the U.S. Army Armament Research, Development and Engineering Center (USARDEC), has been tasked to perform the research on and development of large caliber munitions. Past industrial activities and past waste-disposal practices have resulted in contaminated surface and groundwater in parts of the area.

2.0 PLANNTED INTERIM REMEDIAL ACTION

2.1 INTERIM REMEDIAL ACTION OBJECTIVES

The remedial action objectives for this project were determined by the US Army to be cleanup of groundwater as an interim measure while environmental contamination of the Arsenal as a whole was evaluated. This action will also prevent deterioration of Green Pond Brook water quality by minimizing movement of contaminated groundwater into the brook. A source of contamination, two unlined lagoons alongside Building 24, was eliminated during a 1981 action during which the unlined lagoons were demolished, contaminated soil removed, and two concrete lagoons installed. A dry well, thought to be a second source of VOCs, is still present at Building 24, beneath asphalt pavement just outside the building. The condensate line connecting the plating shop fume/vapor collecting system to the dry well was capped in 1985. A potential third source of VOCs is a former drum storage area at Building 31, directly across the street from Building 24.

Contaminants of interest for the study are the VOCs and heavy metals shown in Table 2-1. Other naturally occurring groundwater constituents of interest include iron, manganese, calcium, copper, and zinc. These constituents are of interest because of their potential effect on treatment system units (i.e., iron, manganese, calcium), and effects on aquatic microogranisms (cooper, zinc) in the event of discharge to surface waters.

Table 2-1. Contaminants and Naturally Occurring Groundwater Constituents

Volatile Organic Contaminants (VOCs)

VOC	Range of Concentrations (ppb)	Average Concentration (ppb)
Benzene	ND - TR	ND/TR
Chloroform	ND - TR	ND/TR
1,1 - Dichloroethylene	ND - 3.6	1.3
1,2 - Trans Dichloroethylene	ND - 160	18.6
Methylene Chloride	ND - 9.6	1.2
Tetrachloroethylene	ND - 78.4	8.9
Toluene	ND	ND
Trichloroethylene	ND - 25,200	854.3
1,1,1 - Trichloroethane	ND - 20.7	15.2
1,1 Dichloroethane	ND - 1.5	0.4
Freon 113	ND - 15	TR
Phenols, total	ND - 50	LT 50

a. Based on average of 1983-1987 data from 9 shallow wells in Study Area

ND = Not detected

TR = Trace (LT 5 ppb)

LT = Less than

Table 2-1. Contaminants and Naturally Occurring Groundwater Contaminants (continued)

Heavy Metals (ppb)	Range of Concentration (ppb)	Average Concentration
Cadmium	1-34.9	10
Chromium	4-57	19.4
Lead	8-108	14.7
Selenium	1-9	5
Arsenic	1-16	6.5
Copper	1-89	32
Zinc	39-1400	244.5
Iron	87-77,895	9359

Note: The nine shallow wells in the study area are:

270093
270094
270095
270096
270238
270239
270243
270267
270282

3.0 EVALUATION OF ALTERNATIVES

3.1 EVALUATION OF ALTERNATIVES

Table 3-1 contains a brief description of the interim remedial action alternatives developed and evaluated in the engineering feasiblity study (FS). An expanded discussion of alternatives returned for detailed evaluation and comparison is included as Appendix A. Those marked by an Asterisk (*) were selected for final evaluation; the others were eliminated on the basis of cost or failure to satisfy EPA and NJDEP regulatory criteria. Alternative 1, the No Action alternative, was retained as the baseline for final evaluations. The interim remedial action alternatives initially considered encompassed the following basic actions:

- No action
- Groundwater withdrawal for treatment by air stripping, followed by discharge to surface water (Green Pond Brook) or reuse by the arsenal
- Groundwater withdrawal for treatment by carbon adsorption
- Groundwater withdrawal for treatment by spray irrigation
- Groundwater withdrawal and discharge to the local sewage treatment plant with no pretreatment

The final evaluation of alternatives eliminated all alternatives except the mandatory No Action alternative and those alternatives employing a groundwater withdrawal system, a groundwater treatment system, and an air stripper (Alternatives 3A, 3B, 3C, 3D, and 3G).

Table 3-1
Summary of Alternatives Evaluated

No.	Title/Description	Advantages	Disadvantages
*1	No Action.	Cost savings; no additional expenditures.	Does not provide control or reduction of contamination, except slow reduction due to dispersal.
2	Groundwater extraction and pretreatment; discharge to STP.	Minimum effort; cost depends largely on fee charged by STP.	Questionable "true" reduction of VOCs (dilution). Possible adverse affect on STP due to reduced biomass concentration.
*3A	Groundwater extraction and pretreatment; air stripper-basic system; discharge to surface waters.	Achieve "in house" groundwater cleanup goals at reasonable cost.	No water effluent polishing or off-gas control. Cost.
*3B	Groundwater extraction and pretreatment; air stripper-basic system; GAC polisher; discharge to surface water.	BAT for groundwater treatment.	Minor cost increase over Alt. 2. No off-gas control. Cost.
**3C	Air stripper-complete system (air stripper polisher, off-gas filter); discharge to surface waters.	BAT for groundwater, air stripper off-gas; meets all ARARs for air and surface water. Favored by NJDEP and EPA Region II.	Cost.

* Alternatives selected for detailed evaluation
** Alternative selected for implementation

Table 3-1.
Summary of Alternatives Evaluated
(continued)

No.	Title/Description	Advantages	Disadvantages
*3D	Groundwater extraction and pretreatment air stripper-complete system; recycle to drinking water treatment system as raw water replacement.	BAT for groundwater, air stripper off-gas. Eliminates need for treated water discharge permit. Reduced cost of operating water treatment plant. Favored by Arsenal.	Cost. Potential Public relations problems in "Selling" reuse of purified water from contaminated area.
3E	Groundwater extraction and pretreament; air stripper-complete system; slurry wall and groundwater extraction trench; discharge to surface water.	Reduced infiltration from Green Pond Brook; small reduction of water volume to be extracted.	Additional cost of slurry wall and gallery. (approx. $950,000).
3F	Groundwater extraction; air stripping raw groundwater; discharge to groundwater (DGW).	Reduced capital and O&M cost over Alternatives 3A-3E.	May not achieve of NJDEP effluent quality requirements for DGW. Negotiable. Same as 3C, 3D.
*3G	Groundwater extraction and pretreatment air stripping; GAC effluent polishing filter; GAC air filter; discharge to surface water initially, consider discharge to Drinking Water System based on system performance (approx. 3-6 months).	Combines the institutional advantages of Alternatives 3C and 3D.	
4	Groundwater extraction; utilize existing drinking water system with addition of air stripper and GAC polishing filter.	Utilize/upgrade existing system; reduce overall costs; eliminate need for industrial wastewater discharge permit.	Possible delay in implementation.

Table 3-1.
Summary of Alternatives Evaluated
(continued)

No.	Title/Description	Advantages	Disadvantages
5A	Groundwater extraction and pretreatment; GAC filteration; discharge to surface water.	Reduce number of unit operations (eliminates air stripper and off-gas controls).	Greater GAC usage at high VOC concentrations. Cost.
5B	Groundwater extraction and pretreatment; GAC filteration; discharge as raw water source to Arsenal's drinking water treatment system.	Reduced number of unit operations (eliminates air stripper and off-gas controls).	Greater GAC usage at high VOC concentrations. Cost.
6A	Groundwater extraction, no pretreatment; spray irrigation to uninhabitated/ unfrequented area(s) of arsenal.	Low cost.	NJDEP permits/approval required for discharge to air, surface water, and groundwater.
6B	Groundwater extraction and pretreatment; spray irrigation to uninhabitated/ unfrequented area(s) of arsenal.	Low to moderate cost; toxic metals removal.	NJDEP permits required for discharges to air,

These remedial action alternatives encompass all alternatives deemed to be both technically and institutionally feasible for this project. These alternatives were discussed and evaluated in two documents previously developed for this project -- the Engineering Feasibility Study and the Cost Estimate reports. Table 3-2 is a summary of the evaluation for the nine criteria required under CERCLA. Background documents used for these reports are listed in the reference section of this ROD.

3.2 SELECTION OF INTERIM REMEDIAL ACTION

USACE has decided to implement Interim Remedial Action Alternative 3C (Table 3-1). Alternative 3C consists of the following:

- groundwater withdrawal
- pretreatment
- air stripping (w/GAC air filter for air emissions control)
- GAC polishing filter
- discharge of treated water to Green Pond Brook

Figure 3-1 is a schematic of the system.

The primary considerations were:

- capability to achieve interim remedial action objectives
- minimization of adverse public health and environmental impacts associated with remedial action implementation
- implementability and dependability of action
- speed with which the alternative could be implemented
- effectiveness and dependability of the unit operations employed in the system
- probability of continuing the interim remedial action as part of the long-term remedial action to be selected following the formal RI/FS

Figure 3-2 provides additional information on location of system components.

Table 3-2. Comparison of Alternatives

Alternative No.	Short-term Effectiveness	Long-term Effectiveness and Permanence	Reduction of Toxicity, Mobility and Volume	Implementability
*1	L	NA	L	H
2	H	NA	M	M
*3A	H	NA	M	M
*3B	H	NA	M	M
**3C	H	NA	H	H
*3D	H	NA	H	M
3E	H	NA	H	H
3F	M	NA	M	L
*3G	H	NA	H	H
4	H	NA	H	M
5A	H	NA	M	L
5B	H	NA	M	L
6A	H	NA	M	M
6B	M	NA	M	H

Relative Achievement of Criterion: H = high; M = moderate, L = low (relative to other alternative presented)

NA: Criterion no applicable for this interim remedial action

* Alternatives selected for detailed evaluation

** Alternatiive selected for implementation

Table 3-2. (continued)

Alternative No.	Cost Effectivness	ARARs Compliance	Overall Protection	State Accept.	Comm Accept.
*1	H	L	L	NA	NA
2	H	M	M	M	H
*3A	M	M	M	M	M
*3B	M	M	M	M	M
**3C	M	H	H	H	H
*3D	M	H	H	M	M
3E	H	H	H	M	M
3F	H	M	M	M	M
*3G	M	H	H	H	M
4	M	H	H	M	L
5A	L	M	M	L	L
5B	L	M	M	L	L
6A	M	M	M	L	L
6B	H	L	L	L	L

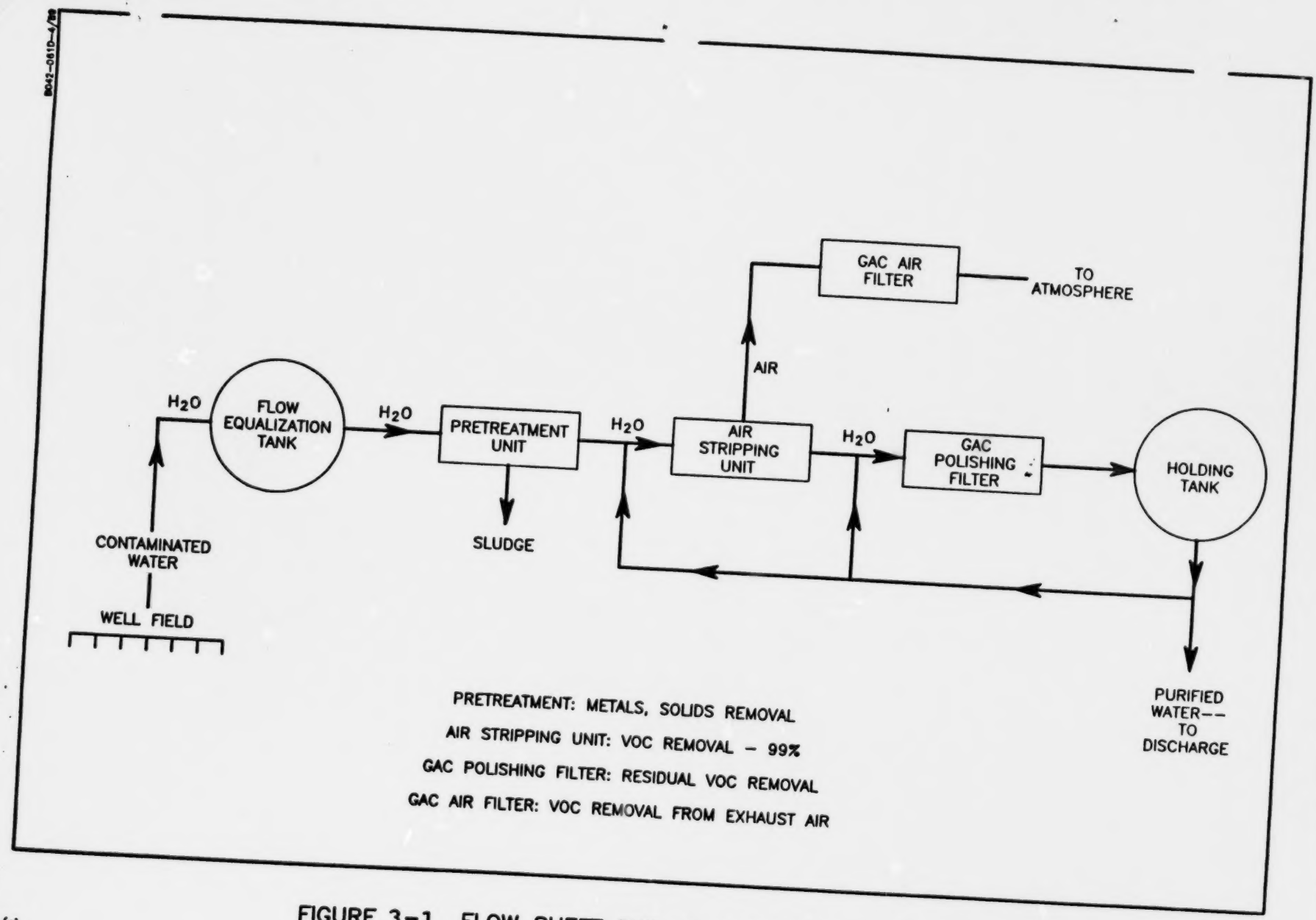

FIGURE 3-1. FLOW SHEET FOR GROUNDWATER TREATMENT SYSTEM

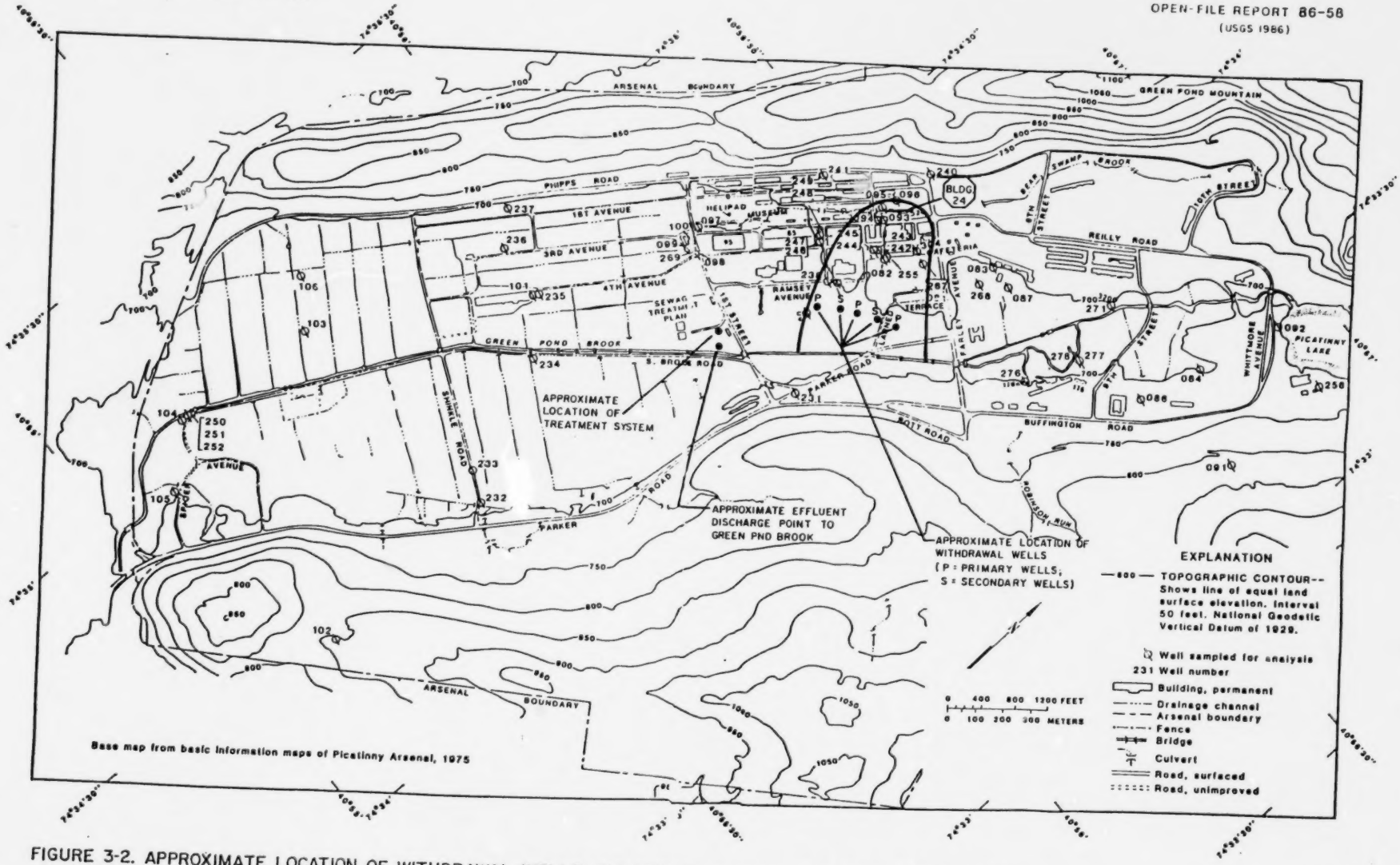

FIGURE 3-2. APPROXIMATE LOCATION OF WITHDRAWAL WELLS, TREATMENT SYSTEM, AND EFFLUENT DISCHARGE POINT

After consultation with responsible NJDEP and EPA Region II authorities, the US Army has determined that Alternative 3C satisfies these considerations.

4.0 STATUTORY FINDINGS

Because this action is an interim remedial action, it is not necessary to achieve all requirements that would apply to a final action under CERCLA. This action provides for the minimization of contaminant migration by hydraulically controlling groundwater movement, and concurrently treating contaminated groundwater for removal of VOCs. Care has been taken to minimize or prevent cross-media contamination; waste streams have been identified and plans made for effective waste management.

4.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

ARARs will be provided by the NJDEP for the following effluents and wastes:

- treated water (to be discharged to Green Pond Brook)
- air emissions from the air stripper
- sludge from pretreatment unit
- spent carbon from GAC air filter and GAC treated water polishing filter

The ARARs shall be used to establish effluent quality and allowable VOC emissions to the atmosphere, and to provide for the management of generated wastes in accordance with NJDEP regulations for the management of industrial and hazardous solid wastes. ARARs for groundwater cleanup will apply to the final remedial action, but not this remedial action. However, cleanup of groundwater and soil will progress under this interim action.

4.2 PERMITS AND APPROVALS

Because this action is being performed under CERCLA, formal permits for discharges to air and surface water and operation of a waste treatment facility are not required. However, NJDEP and EPA technical requirements for these permits will be established and met during the performance of this action.

4.3 REDUCTION OF MOBILITY, TOXICITY, OR VOLUME

The plannned interim remedial action will be effective in reducing the mobility, toxicity, and volume of contaminated groundwater. Approximately 144,000 - 216,000 gallons of water will be pumped and treated daily.

4.4 COST-EFFECTIVENESS OF PLANNED ACTION

This action has been determined to be cost-effective for the objectives of the action. Cost data cannot be provided at this time, however, since USACE is preparing to offer a competitive bid contract for the performance of the action, to include final design, installation, and operation and maintenance of the system.

4.5 USE OF ALTERNATIVE TECHNOLOGIES AND PERMANENT SOLUTIONS

Use of alternative or innovative technologies were not applicable to this interim action, since time constraints dictated that proven and dependable technologies be employed. While this action is not in itself permanent solution, it will likely be continued, with or without modification, to become part of the permanent solution.

5.0 SUMMARY AND CONCLUSIONS

5.1 SUMMARY

5.1.1 Environmental Impacts

A discussion of probable and potential (possible) environmental impacts, both adverse and beneficial, is provided in the Environmental Assessment (EA) Report issued under separate cover concurrently with this ROD. This EA was performed in accordance with regulations promulgated by the President's Council of Environmental Quality (CEQ) at 40 CFR 1500-1508, and by the USACE at 32 CFR 651 (U.S. Army Regulation 200-2).

5.1.1.1 Groundwater Impacts

Impact on groundwater will be beneficial, since contaminants will be removed much faster than they would be by natural flushing, and practically all VOCs removed will be trapped for proper disposal. Other process wastes will be analyzed and managed as hazardous or nonhazardous solid wastes, as appropriate.

5.1.1.2 Surface Water Impacts

The very high quality effluent (treated groundwater) from the system will have little, if any, effect of surface water quality. The maximum discharge rate of approximately 150 gpm is a small percentage of base flow for Green Pond Brook, and the water will be well-oxygenated (air stripper) and of equal (or better) purity. Discharge temperature will be approximately ambient. Effluent pH will met NJPDES requirements for point source discharge to surface water.

5.1.1.3 Air Quality Impact

Air quality impact will be negligible with or without GAC air filtration. Peak VOC discharge from the air stripper will be approximately one pound per day, with an expected average of 1/2 to 2/3 pounds per day. A GAC air filtration system will trap 99% or more of the VOCs.

5.1.1.4 Waste Generation

Generated wastes will consist of the following:

- o pretreatment system sludge containing metals and solids from the groundwater
- o expended GAC from the effluent polishing filter
- o expended GAC from the air filter

The pretreatment system sludge will be similar to that generated in the Arsenal's drinking water system. The sludge will be presumed to be hazardous, and tested to determine actual constituents and characteristics. The expended GAC will be shipped off site for disposal as a hazardous waste or regenerated for reuse by the supplier. The VOCs managed as a hazardous waste under RCRA rules. Heavy metals characteristic of plating shop wastes are present at elevated levels in groundwater in the vicinity of Building 24; however, it is unlikely that these metals will be present at higher than back ground levels in the groundwater withdrawal area.

5.1.2 Public Health Effects

There will be no adverse public health effects as a consequence of this action. Use of water from the area as a drinking water source was discontinued in 1985. Use of the groundwater will continue to be restricted by the US Army.

5.2 CONCLUSIONS

USACE has determined that the selection and implementation of this selected interim remedial action alternative meets all regulatory requirements of the CEQ and the US Army. It will provide for public health and environmental protection in a cost-effective manner, and will not in any way adversely effect plans for long-term remediation at the Arsenal.

Signed:

_____

Lewis D. Walker

Deputy Assistant Secretary of
the Army
Environmental, Safety and
Occupational Health

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APPENDIX A

DETAILED EVALUATION OF REMEDIAL ACTION ALTERNATIVES

DETAILED ANALYSIS OF INTERIM REMEDIAL ACTION ALTERNATIVES

1.1 INTRODUCTION

The detailed analysis of alternatives is the analyses and presentation of the relevant information needed to allow decisionmakers to select a site remedy: it is not the decisionmaking process itself. Each alternative has been assessed against the nine evaluation criteria described below (Section 1.1.3). The results of this assessment are arrayed such that comparisons can be made among alternatives and the key tradeoffs among alternatives can be identified. This approach to analyzing alternatives provides decisionmakers with sufficient information to adequately compare the alternatives, select the most appropriate remedy for a site (in this case an interim action), and demonstrate that the goals of the Record of Decision (ROD) have been met.

1.1.1 Requirements to be Addressed

The specific CERCLA requirements that must be addressed in the ROD and supported by the Feasibility Study (FS) report for a permanent solution are listed below:

- Be protective of human health and the environment.
- Attain ARARs (or provide grounds for requesting a waiver).
- Be cost-effective.
- Use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. (not applicable to this interim remedial action).
- Satisfy the preference for treatment that reduces toxicity, mobility, or volume as a principal element (or provide an explanation in the ROD as to why it does not).

However, for this interim remedial action, these considerations must be viewed from the prespective of improving the groundwater situation while complying with environmental regulations. This

interim remedial action must not result in significant degradation of other media (air, soil, surface water).

1.1.2 Considerations for Long-term Effectiveness

Because this project is an interim remedial action being voluntarily implemented while a formal RI/FS is performed, considerations of long-term effectiveness are not applicable.

1.1.3 Evaluative Criteria for Remedial Action Alternative

Nine evaluation criteria have been developed to address the CERCLA requirements and considerations listed above as well as additional technical and policy considerations that have proven to be important for selecting a remedial action from among remedial alternatives. These evaluation criteria serve as the basis for conducting the detailed analyses during the FS and for the subsequent selection of an appropriate remedial action. The evaluation criteria and associated considerations are:

- Short-term effectiveness
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume
- Implementability
- Cost
- Compliance with ARARs
- Overall protection of human health and the environment
- State acceptance
- Community acceptance

For this interim remedial action, short-term effectiveness, implementability, cost, and compliance with ARARs are the primary considerations. The other criteria, while still important, will be more fully addressed in the formal RI/FS to be performed at a later date.

The detailed analysis of alternatives consists of the following:

- Further definition of each alternative with respect to the volumes or areas of contaminated media to be addressed, the technologies to be used, and any performance requirements associated with those technologies
- An assessment and a summary of each alternative against the nine evaluation criteria
- A comparative analysis among the alternatives to assess the relative performance of each alternative with respect to each evaluation criterion

Figure 1 illustrates the steps in the detailed analysis process.

Figure 2 is a presentation of criteria for the detailed analysis of alternatives.

1.1.4 Summary of Key Environmental Protection Permits

Table 1 is a summary of key environmental protection permits that would be required for each alternative retained for detailed analysis.

1.2 ANALYSIS OF ALTERNATIVES

The evaluation of the alternatives that passed the FS preliminary screening is presented in this subsection. Each alternative was evaluated on the basis of the nine criteria discussed in Subsection 1.1.

DETAILED ANALYSIS OF ALTERNATIVES

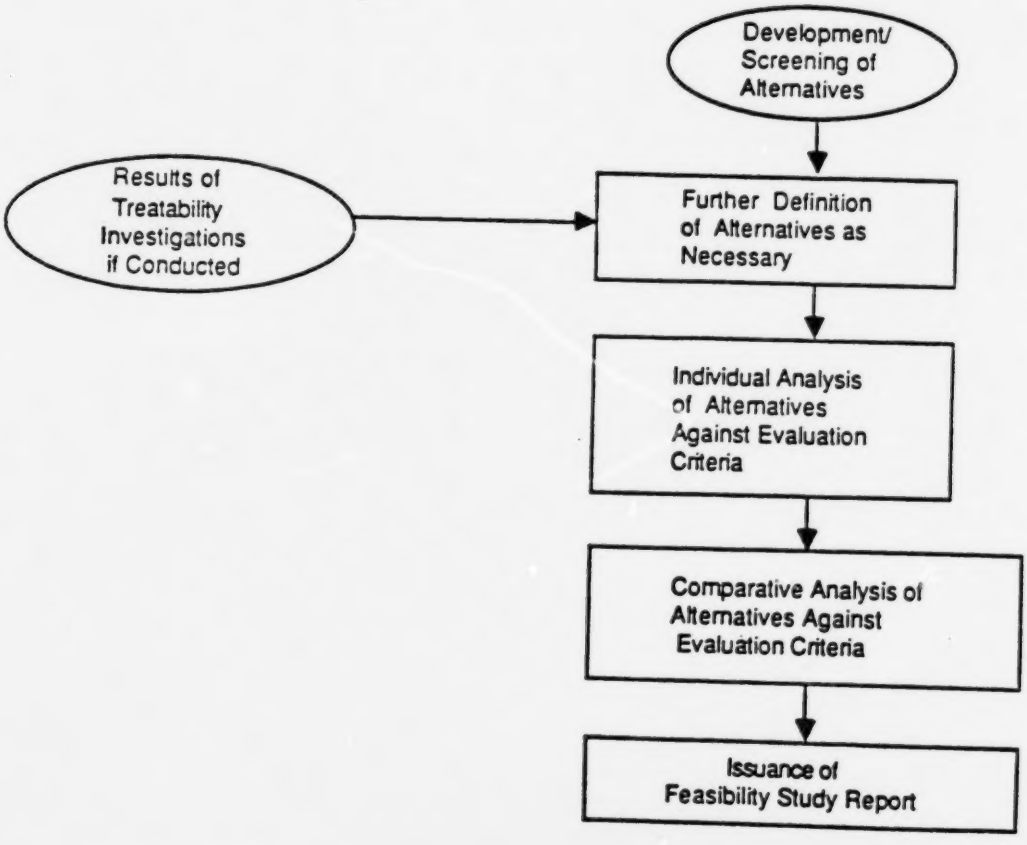
Development/ Screening of Alternatives
Results of Treatability Investigations if Conducted
Further Definition of Alternatives as Necessary
Individual Analysis of Alternatives Against Evaluation Criteria
Comparative Analysis of Alternatives Against Evaluation Criteria
Issuance of Feasibility Study Report

Figure 1. Detailed Analysis of Alternatives

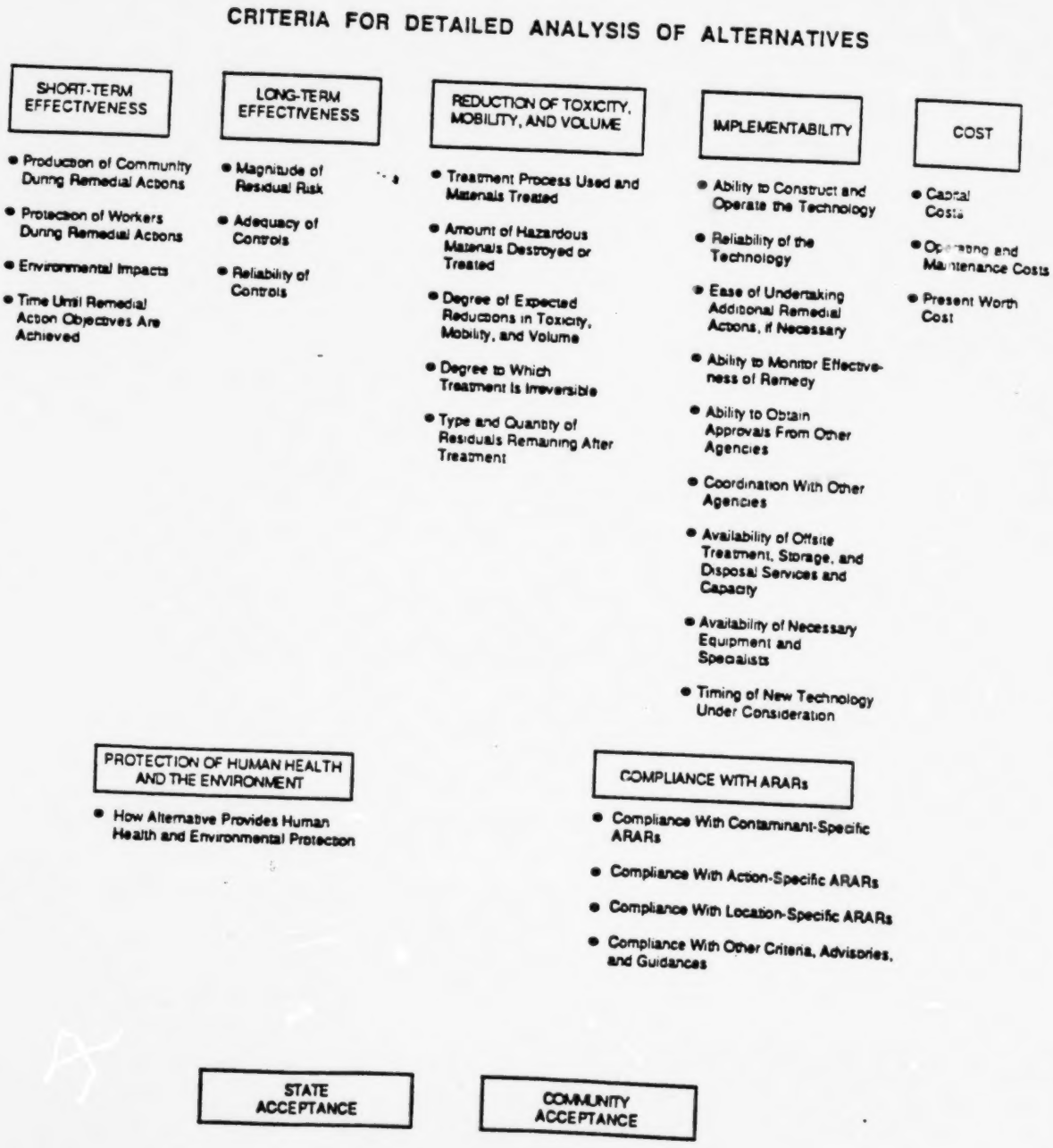
CRITERIA FOR DETAILED ANALYSIS OF ALTERNATIVES
SHORT-TERM EFFECTIVENESS
• Production of Community During Remedial Actions
• Protection of Workers During Remedial Actions
• Environmental Impacts
• Time Until Remedial Action Objectives Are Achieved
LONG-TERM EFFECTIVENESS
• Magnitude of Residual Risk
• Adequacy of Controls
• Reliability of Controls
REDUCTION OF TOXICITY, MOBILITY, AND VOLUME
• Treatment Process Used and Materials Treated
• Amount of Hazardous Materials Destroyed or Treated
• Degree of Expected Reductions in Toxicity, Mobility, and Volume
• Degree to Which Treatment Is Irreversible
• Type and Quantity of Residuals Remaining After Treatment
IMPLEMENTABILITY
• Ability to Construct and Operate the Technology
• Reliability of the Technology
• Ease of Undertaking Additional Remedial Actions, if Necessary
• Ability to Monitor Effectiveness of Remedy
• Ability to Obtain Approvals From Other Agencies
• Coordination With Other Agencies
• Availability of Offsite Treatment, Storage, and Disposal Services and Capacity
• Availability of Necessary Equipment and Specialists
• Timing of New Technology Under Consideration
COST
• Capital Costs
• Operating and Maintenance Costs
• Present Worth Cost
PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT
• How Alternative Provides Human Health and Environmental Protection
COMPLIANCE WITH ARARs
• Compliance With Contaminant-Specific ARARs
• Compliance With Action-Specific ARARs
• Compliance With Location-Specific ARARs
• Compliance With Other Criteria, Advisories, and Guidances
STATE ACCEPTANCE
COMMUNITY ACCEPTANCE

Figure 2. Criteria for Detailed Analysis of Alternatives

Table 1. Summary of Major Permits or Approvals Required for each Remedial Action Alternative

Alternative No.	Approvals/Permits Required				
	Groundwater Quality Waiver	Air Emission	Discharge (NJDPES) Industrial Wastewater		Water Well Installation
			Point Source	Non-Point Source	
1	X	--	--	--	--
3A	(X)	X	X	--	X
3B	(X)	X	X	--	X
3C	(X)	X	X	--	X
3D	(X)	X	--	--	X
3G	(X)	X	X	--	X

( ) Indicates questionable requirement

Table 1. (continued)

Alternative No.	Discharge to Sewage Treatment	Public Drinking Water System	Hazardous Waste Generation No. (Possibly--Pretreatment Sludge)	Hazardous Waste Storage (Possibly--Pretreatment Sludge)
1	--	--	--	--
3A	--	--	--	--
3B	--	--	X	X
3C	--	--	X	X
3D	--	X	X	X
3G	--	X	X	X

For all action alternatives, the following are key considerations for comparative evaluations:

- pumping rate: 100 gpm (plan); 150 gpm (maximum)
- Estimated VOC concentrations at treatment units: 750 ppb maximum; 500 ppb average
- VOC quantity stripped from water per day: Approx. 0.37 kilogram per day (p.81 pounds per day) at 750 ppb; 1/3 less at 500 ppb
- single stripping tower removal efficiency: 99%; residual effluent concentration. 7.5 ppb for 750 ppb influent
- two stripping towers in series: 99.9% removal; residual effluent concentrations less than 1 ppb (ideally)
- GAC polishing filter -- polish effluent from one stripping tower to less than 1 ppb; also removes metals and other organics that may not be removed efficiently by air stripping. Also capable of operating without air stripper, with more frequent GAC replacement.
- costs similar for second air stripper and GAC polishing filter

The following discussions of the alternatives analysis uses the above facts as the basis for technical evaluation.

1.2.1 Alternative 1 Analysis

Alternative 1, the No Action alternative, is presented as the baseline case for comparison of all remedial action alternatives. This alternative was ruled out when the US Army decided to implement this interim groundwater remediation project while plans are being made for an arsenal-wide RI/FS under the Defense Environmental Restoration Program (DERP).

1.2.1.1 Short-term Effectiveness

Not applicable for the No Action Alternative.

1.2.1.1 Long-term Effectiveness and Permanence

Not applicable for the No Action Alternative.

1.2.1.3 Reduction of Toxicity, Mobility, or Volume

No Action would result in the slow decrease in VOC and toxic metals concentration with time. VOC concentration would decrease primarily as a result of dilution and dispersion. Some decrease in groundwater VOC concentration may result from microbial activity and volatilization into the vadose zone, and then to the atmosphere. However, these later two mechanisms would probably be of minor consequence especially for the chlorinated organics. Reduction in toxic metals concentrations present at levels above background would occur as a result of dilution and dispersion, as well as precipitation after natural geochemical conversion to less soluble forms.

1.2.1.4 Implementability

Not applicable to the No Action Alternative.

1.2.1.5 Cost

Costs would consist of continued groundwater monitoring until implementation of a final remedial action after the completion of the planned Arsenal-wide RI/FS.

1.2.1.6 Compliance with ARARs

Consideration of ARARs is not applicable in this case, since the planned action is being voluntarily performed as an interim action while the formal RI/FS is being planned.

1.2.1.7 Overall Protection

The situation does not constitute a threat to human-health, since the use of groundwater is being controlled at the Arsenal and no water is being drawn from the contaminated area. Presence in Green Pond Brook of contaminants from the plume are near detection levels (less than 5 ppb), and the water from the brook is not used directly as a drinking water source. The brook discharges into the Rockaway River, which discharges to Boonton Reservior, a drinking water source.

1.2.1.8 State of New Jersey Acceptance

Since this interim action was initiated by the U.S. Army as an interim measure, State of New Jersey acceptance of the No Action Alternative is not an issue.

1.2.1.9 Community Acceptance

The community is the military personnel assigned to the Arsenal the dependents of these who reside on the Arsenal; the civilian workers who are employed by the Arsenal; and others living in the vicinity of the Arsenal who may be affected by the action. All real property on the Arsenal is federally owned (land, buildings, etc.).

1.2.2 Alternative 3A Analysis

Alternative 3A consists of groundwater extraction, pretreatment, and removal of VOCs by means of a countercurrent airflow packed column stripping tower. There would be no control over air emissions; treated water would be discharged to surface water without final "polishing".

1.2.2.1 Short-term Effectiveness

The short-term effectiveness of this would be high for removal of contaminants from groundwater.

1.2.2.2 Long-term Effectiveness and Permanence

Long-term effectiveness and permanence is not an issue for this interim action.

1.2.2.3 Reduction of Toxicity, Mobility, and Volume

Toxicity

Reduction of toxicity of groundwater would be achieved by removal of contaminated groundwater.

Mobility

Reduction of mobility (contaminant plume spread) would be achieved by groundwater withdrawal at a rate of 100 gpm from the designated locations.

Volume

Volume reduction is not applicable to this alternative.

1.2.2.4 Implementability

This alternative would be technically simple to implement. Institutional considerations are concerned with air emissions (VOC-contaminated air from the stripping tower) and discharge of the "stripped" water to surface water. These issues will have to be discussed with the respective NJDEP representatives, since they are site specific issues.

1.2.2.5 Cost

Cost information is presented in the Cost Estimate Report for this project.

1.2.2.6 Compliance with ARARs

Compliance with ARARs would be determined by negotiation with NJDEP representatives.

1.2.2.7 Overall Protection

This alternative would be protective of human-health and the environment.

1.2.2.8 State of New Jersey Acceptance

NJDEP Approval would be required for discharge of VOCs to air and discharge of the treated effluent to surface waters.

1.2.2.9 Community Acceptance

Community acceptance will probably not be an issue for this action.

1.2.3 Alternative 3B Analysis

Alternative 3B is the same as Alternative 3A, except that the effluent water from the air stripper would be "polished" by means of filtering through a GAC filter to reduce residual VOC and metals concentrations to very low concentrations.

1.2.3.1 Short-term Effectiveness

Same as Alternative 3A.

1.2.3.2 Long-term Effectiveness and Permanence

Not applicable.

1.2.3.3 Reduction of Toxicity, Mobility, and Volume

With respect to groundwater treatment, reduction of toxicity, mobility, and volume be the same as Alternative 3A.

1.2.3.4 Implementability

Implementability is similar to Alternative 3A. The addition of a GAC polishing filter would be a simple matter and would insure high final water quality since variations in stripping tower effluent quality would be eliminated.

1.2.3.5 Cost

Cost information is presented in the Cost Estimate Report.

1.2.3.6 Compliance with ARARs

Compliance with ARARs would be largely assured; the only probable area of concern would be air emissions, and would have to be resolved with NJDEP on a site-specific basis.

1.2.3.7 Overall Protection

Same as Alternative 3A.

1.2.3.8 State of New Jersey Acceptance

State of New Jersey Acceptance would depend on the final requirement established by NJDEP for emission of VOCs from the air stripping tower.

1.2.3.9 Community Acceptance

Same as Alternative 3B.

1.2.4 Alternative 3C Analysis

Alternative 3C is the same as Alternative 3B, except for the addition of a GAC air filter.

1.2.4.1 Short-term Effectiveness

Same as Alternatives 3A and 3B.

1.2.4.2 Long-term Effectiveness and Permanence

Not applicable.

1.2.4.3 Reduction of Toxicity, Mobility, and Volume

Same as Alternatives 3A and 3B.

1.2.4.4. Implementability

Same as Alternative 3B except for minor additional effort to place hood and GAC filter system to collect and filter VOCs from the air.

1.2.4.5 Cost

Cost information is presented in the Cost Estimate Report for this project.

1.2.4.6 Compliance with ARARs

This Alternative would comply with all ARARs.

1.2.4.7 Overall Protection

This Alternative which incorporate best avaiable technology would provide high overall protection via all affected media (groundwater, surface, water, air).

1.2.4.8 State of New Jersey Acceptance

This Alternative would meet all requirements of the NJDEP for groundwater, surface water, and air.

1.2.4.9 Community Acceptance

Community acceptance can be virtually assured.

1.2.5 Alternative 3D Analysis

Alternative 3D would be essentially the same as Alternative 3C, except that treated water from the interim groundwater treatment system would be used as a high quality source of raw water for the Arsenal's drinking water treatment system.

1.2.5.1 Short-term Effectiveness

Same as Alternative 3C.

1.2.5.2 Long-term Effectiveness and Permanence

Not applicable.

1.2.5.3 Reduction of Toxicity, Mobility, and Volume

Same as Alternative 3C.

1.2.5.4 Implementability

Same as Alternative 3C, except for discharge of treated water.

1.2.5.5 Cost

Cost data presented in the Cost Estimate Report.

1.2.5.6 Compliance with ARARs

Alternative 3D would comply with all ARARs.

1.2.5.7 Overall Protection

Same as Alternative 3C.

1.2.5.8 State of New Jersey Acceptance

Same as Alternative 3C, except that initial testing of the groundwater treatment system effluent and periodic monitoring for VOCs in the finished drinking water would be required to ensure the water treatment plant output was safe.

1.2.5.9 Community Acceptance

Community acceptance by the Arsenal's residents and workers would likely be a simple matter, since drinking water quality would likely be of higher purity than existing drinking water because of

the higher level of treatment employed.

1.2.6 Alternative 3G Analysis

Alternative 3G would initially be the same as Alternative 3C. Treated water would be discharged to surface water (Green Pond Brook) for a 2-6 month period during which effluent quality was verified. If water quality consistently met or exceeded federal and state requirements for drinking water quality, the possibility of diverting the treated water to the Arsenal's drinking water plant for finishing (i.e., chlorination) would be investigated. The treated water could also be used for other (non-potable) Arsenal needs that could be met by the high quality water.

1.2.6.1 Short-term Effectiveness

Sames as Alternative 3C and 3D.

1.2.6.2 Long-term Effectiveness

Not applicable to interim remedial action.

1.2.6.3 Reduction of Toxicity, Mobility, and Volume

Same as Alternatives 3C and 3D.

1.2.6.4 Implementability

Initially same as Alternative 3C. Would not be subject to delays as Alternative 3D would be (evaluations for use as drinking water; public concerns).

1.2.6.5 Cost

Cost considerations are presented in the Cost Estimate Report.

1.2.6.6 Compliance with ARARs

Initially, compliance with ARARs would be the same as for Alternative 3C. If the decision was made to pursue the Alternative 3D discharge scenario, compliance would be the same as Alternative 3D. Discharge to other than surface water or drinking water system would require a reevaluation of ARARs; however, it is unlikely that ARARs for other uses of the water would present a problem. Other uses of water could be in industrial processes, lawn irrigation, etc., in which potable water is not required.

1.2.6.7 Overall Protection

Overall protection provided would be the same as Alternative 3C or 3D.

1.2.6.8 State of New Jersey Acceptance

Acceptance by the State of New Jersey is highly likely for discharge to surface water. A formal system effluent monitoring program would be required to establish system performance before the State could grant use of the system effluent as input to the Arsenal drinking water system.

1.2.6.9 Community Acceptance

Community Acceptance would likely be intermediate between acceptance of Alternatives 3C and 3D. There could be some questioning of (or opposition to), at least initially, the possibility of use of the system effluent as drinking water.

1.3 Management of Wastes and Effluents

Table 2 is a summary of wastes and effluents that would be produced by any of the action alternatives. None of the wastes present any particular problem. Groundwater pretreatment sludge should be non-

hazardous. However, it will be tested for toxicity characteristics by the Toxicity Characteristics Leaching Procedure (TCLP) method and analyzed for metals and organics (pesticides and solvents), to determine the amount (if any) of solvents that adhere to settled solids and to determine if heavy metals concentrated by the process present a threat. It is anticipated that pretreatment sludge will be co-disposed with sludge produced by the Arsenal's drinking water system. However, if waste is hazardous, it will be transported by a licensed transporter to a permitted hazardous waste management facility for disposal. Sludge pretreatment, if required, will be performed in accordance with requirements of the NJDEP and the receiving HWMF. Spent GAC will be returned to the vendor (preferably), or will be transported to a contracted GAC regeneration site for regeneration. The spent GAC will be managed as a RCRA hazardous waste.

Table 2. Management of Wastes and Effluents

Waste Type	Source	Annual Volume	Waste Characterization Method	Waste Disposal	Regulatory Requirement
Ground Pre-treatment sludge	Groundwater pretreatment unit	---	TCLP; Hazard characteristics	Solid or hazardous waste	40 CFR 261,268 40 CFR 403
GAC Air Filter regeneration concentration	VOC-laden Air Stream	90 Kg (200 lb)	E 624	Return to vendor for regeneration	40 CFR 261, 268
GAC Polishing	(Residual)	3 Kg (6.6 lbs)	E 624	Return to vendor for regeneration	40 CFR 261, 268 40 CFR 403
Filter re-generation concentrate	VOCs from (pre)-treatment groundwater				

Effluent	Source	Annual Volume	Effluent Monitoring	Discharge	Regulatory Requirment
Treated ground-water	Treatment system	105 MG	E 624 E 200.7	Green Pond Brook	40 CFR 122, 125 40 CFR 403
Air Stripper exhaust air	Air Stripper	700 million CF	E 624	Atmosphere	40 CFR 60

MG = million gallons
CF = cubic feet

RESPONSES TO REVIEWER COMMENTS

ON

DRAFT RECORD OF DECISION

FOR

INTERIM GROUNDWATER REMEDIATION
BUILDING 24 STUDY AREA
PICATINNY ARSENAL, NEW JERSEY

Response to USATHAMA Comments on the Draft Record of Decision

Page	Para	Line	Comment	Response
1-1	1	1	Change to read "USATHAMA is preparing...."	Done.
1-1	2	6	Should be "previous investigations ..... have defined....."	Corrected.
1-1	3	3	Correct spelling of "Armament".	Corrected.
1-1	4	5	Area should be singular.	Corrected.
1-2	1	10	Remove "the" or make 1800 plural.	Corrected to "...1800s"
1-2	2	2	Correct spelling of "Armament". This should be singular.	Corrected.
1-2	3	7	Qualify development of nuclear munitions. See comment on Scope of Work document.	"...conventional and nuclear.." deleted from sentence, as it was from Scope of Work.
1-2	3	7	Correct spelling of "Past".	Corrected.
1-2	3	8	Should be have resulted in	Corrected.
1-2	3	9	Correct spelling of "contaminated".	Corrected.
2-1	1	3	Sentence beginning with "The primary source ..." please rewrite. It is not sure whether the lagoons were the primary source of contamination however they are considered to be one of the sources. Quantification at this point is difficult.	"The primary source" change to "A source"
2-2	Table 2-1		Note a. Please identify which 9 wells were sampled. Also, why wasn't 1987 USGS data included?	Identification of the nine wells added to page 2 of Table 2-1. 1987 data included (received 22 May; copy of report previously furnished was missing data tables).

RESPONSE TO EPA REGION II COMMENTS ON DRAFT RECORD OF DECISION (ROD)

	Comment	Response
p. 2-1	"These constituents are of interest because of <u>their</u> potential effect ..."	Corrected.
p. 2-2	The following comments refer to Table 2-1:	
	a) Which shallow wells were used to collect contaminant concentration data? A map showing well locations may be a good idean. I assume, from looking at the FS Table 1-3, that these wells are the ones marked (s). This should be clarified in the ROD.	a) List of the nine shallow wells added as note to Table 2-1. Figure and Table from the FS addded to show well locations and well data.
	b) The range of concentration shown in Table 2-1 is incorrect. For example, in 1983, TCE was found from groundwater samples at well #270094 to be as high as 25,200 ppb. Freon-113 certainly has higher than "trace" concentrations in well #270094.	b) Table 2-1 reproofed. TCE concentration range to read "ND-25,200". The 6241 ppb number, the "average" concentration for the 1983-1985 well No. 290094 data, was entered in error. The 1986 USGS report, "Groundwater Quality data for Picatinny Arsenal, New Jersey, 1958-85", shows Freon-113 concentration in well No. 270093 to be ND for reading was 6 ppb (28 July 1981).
	c) Why is the average TCE concentration for the 9 shallow wells in Table A-1 of the FS (834.7 ppb) differenct than the average shown in Table 2-1 of the draft ROD (854.3 ppb)?	c) Table 2-1 of the FS included data for 16 wells in the study area. Table 2-1 of the ROD included only the nine shallow wells.
p. 3-1	a) Five "basic actions" are listed as integral parts of the remedial action alternatives initially considered. Shouldn't pretreatment and a combination of the listed actions be included as well.	Groundwater pretreatment was a component of several remedial action alternatives. Combination of actions is not a basic action.
	b) The last sentence states ".. employing a ground water withdrawal system, a groundwater treatment system, and an air stripper." Isn't an air stripper part of the treatment system? The sentence should state".. a groundwater treatment system <u>which would include different combinations of the following units: air stripper, off-gas filter, polishing filter</u>". etc.	1) "air stripper" corrected to "air filter" 2) suggested rewrite of last sentence would be inaccurate, since not all units are included in each remedial action alternative.

RESPONSE TO EPA REGION II COMMENTS ON DRAFT RECORD OF DECISION (ROD)
(continued)

Comment	Response
c) The comparative analysis of alternatives presented in the FS (pages 4-7 throught 4-19) should also be included in the ROD. While Table 3-2 is helpful, alone, it is not sufficient to explain the Army's reasons for supporting a particular remedy.	c) Comparative analysis table from FS added. FS text added to ROD as New Appendix A.

Response to USATHAMA Comments on the Draft Record of Decision
(continued)

Page	Para	Line	Comment	Response
3-3	Table 3-1		Remove one from 3G this was not the alternative selected for implementation. Also, 6A is basically same as 3G (with different time, typo?) Shouldn't 6A be spray irrigation?	a) removed. b) 6A information in error; should be spray irrigation. Corrected.
3-4	2	2	"Alternatives" should be singular.	Corrected.
3-4	3	3rd bullet	Correct spelling of "implementability" (Is this a word?)	Spellling corrected. "Implementability" is official USEPA terminology (Candidate for Armed Forces Journal International's "Al Haig non-word of the month" award?)
3-4	4	1	Should read "After consultation with...."	Corrected.
4-1	1	4	Correct spelling of "hydraulically"	Corrected.
4-1	2	1	Is it true that ARARs will be provided by the NJDEP? Also, isn't spent carbon being returned returned to manufacturer?	a) Yes. Ms. Anne DeCicco NJDEP Project Officer, has provided Tom Solecki with an NJDEP ARARs compilation. Specific ARARs for the interim remedial action will be determined by NJDEP or EPA Region II b) Per the 4 May review meeting, it was determined that return of spent carbon to supplier will be a contract requirement. Sentence revised accordingly.

RESPONSE TO EPA REGION II COMMENTS ON DRAFT RECORD OF DECISION (ROD)
(continued)

	Comment	Response
p. 3-2	The advantages column for Alternatives 3C and 3D should state "meets all ARARs <u>for discharge to air and surface water</u>".	Clause added as suggested. ERCE is awaiting a statement from EPA and/or NJDEP as to what requirements will be considered ARARs for this interim action.
p. 3-4	More details should be given to the discussion of alternative 3C, especially since we know what the rate of withdrawal will be as well as removal efficiency targets. Tying these numbers into specific ARARs would be helpful.	Discussion expanded. Specific ARARs for this interim action have not yet been provided.
p. 4-1	The 9 criteria have not sufficiently been addressed for the proposed alternative, 3C. The criteria include: - Overall protectiveness of human health and the environment. - Compliance with ARARs (with some detail) - Long-term effectiveness and performance - Reduction of toxicity, mobility, and volume - Implementability - Cost - State acceptance - Community acceptance	A new Table 4-1 has been developed to provide an abbreviated discussion of the nine criteria. ERCE was not aware that the nine criteria were statuatory requirements. The items discussed were the five statuatory requirements described in Appendix C (Documenting an Interim Action) of EPA's "Guidance or Remedial Actions for Contaminated Groundwater at Superfund sites", OSWER Directive 9283.1-2, February 1989. The document was provided for this project by Ms. Anne DeCicco of NJDEP. New Appendix A added with expanded discussion on alternatives.
p 5-2	The last paragraph should state "... use of water from <u>groundwater</u>".	Corrected.

General comments:

a)	Maps should be included in the ROD to show site locations, sampling locations, plume location, source area, etc..	a) Maps added to ROD.
b)	A flow diagram of the treatment train used in the proposed alternative 3C would be helpful. Arrows showing discharge should also show compliance with surface water or air emission ARARs.	b) Flow diagram added.

Response to USATHAMA Comments or the Draft Record of Decision
(continued)

Page	Para	Line	Comment	Response
4-1	3	4	This is not a soil clean-up action just groundwater.	"... and soil..." deleted from sentence. (Note: NJDEP provided soil clean-up guidelines at 13 April meeting in Trenton but has not otherwise identified soil contamination as a subject to be addressed).
4-2	3	3	Should read "a permanent solution".	Corrected.
5-1	5.1.1.2		Was pH considered?	Yes. Addressed by NJPDES ARARs.
5-1	4	3	"Pounds" should be singular.	Corrected.
5-2	2	1	Should read "similar to <u>that</u> generated".	Corrected.
5-2	2	4	"Characteristics" should be singular.	Corrected.
5-2	2	6	Should read "higher <u>than</u> background ...."	Corrected.
5-2	3	2	Correct spelling of area.	Corrected.
5-3			Sentence does not make sense. Something is missing. Also Mr. Walker's title is Deputy Assistant Secretary of the Army Environment. Safety and Occupational Health OASA (I&L).	a) Spelling of "Cost Effective" corrected; otherwise, sentence is acceptable, However, sentence rewritten to be two sentences for clarity. b) Title corrected.

RESPONSE TO NJDEP COMMENTS ON DRAFT ROD FOR PICATINNY ARSENAL INTERIM REMEDIAL ACTION

	Comment	Response
1.	Page 4-1, Section 4.2, Permits and Approvals According to representative from DWR, Bureau of Industrial Discharge Permits, the need for a surface water discharge permit for the interim remedial action (IRA) is unresolved. A NJDEP permit may be required even though EPA has indicated that it could be waived (providing that permit requirements are met).	Noted.
2.	Page 4-2, Section 4.5, Alternative Technologies and Permanent Solutions Change "alternative" to "innovative" in section title and discussion.	Action deferred. The title was taken from Appendix C (Documenting an Interim Action) of EPA's "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Site. This document was provided for project use by Ms. Anne DeCicco of NJDEP. Please clarify which guidance is to be used.
3.	Page 5-2, Section 5.1.2, Public Health Effects Clarification of 2nd sentence is needed. ("... use of water from the air ..."?)	Sentence corrected.

U.S. ARMY ENGINEER DIVISION HUNTSVILLE

DESIGN REVIEW COMMENTS

RBD

CORPS OF ENGINEERS

PROJECT AMC Environmental - Bldg. 24 Interim Remedial Action, DF #5-8, S:10 May 1989

☒ SITE DEV & GEO TECH ☐ ENVIR PROT & UTIL ☐ ARCHITECTURAL ☐ STRUCTURAL ☐ MECHANICAL ☐ MFG TECHNOLOGY ☐ ELECTRICAL ☐ INSTR & CONTROLS ☐ SAFETY ☐ ADV TECH ☐ ESTIMATING ☐ SPECIFICATIONS ☐ SYSTEMS ENG ☐ VALUE ENG ☐ OTHER

REVIEW Draft Record of Decision

DATE 10 May 1989 TYPE

NAME K. Healy/bjr/5170

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Section 1.3, Para 2	In lines 7 and 8, change "part" to "past" and "has" to "have."	A. Done.
2.	Section 2.1	The decision to proceed with an IRA at this site was made by Arsenal personnel and USATHAMA. The reference here to USACE is inaccurate. Additionally, in line 3, change "the primary..." to "A potential...".	A. Changed to USATHAMA, per USATHAMA. Line 3 change made.
3.	Table 2.1	Correct the spelling of "naturally" in the title. Additionally, on page 2-3, the average concentration of zinc is listed as higher than the range of concentrations found.	A. Corrected. Zinc average conc. corrected.
4.	Section 3.1, Para 1	An attempt is made to present a <u>general</u> overview of <u>basic</u> actions involved in all interim remedial action alternatives; yet specific actions (e.g. withdrawal for treatment by carbon absorption) are listed, implying that all alternatives employed this treatment. This is not the case. Reword items 2 through 4 as follows: Item 2 Groundwater withdrawal for treatment either directly, or following pre-treatment. Item 3 Groundwater treatment by air-stripping, carbon absorption, or spray irrigation. Item 4 Groundwater discharge (following treatment) to existing surface water courses, water treatment facilities, the surrounding ground area, or the existing sewage treatment facilities. Item 5 Delete.	A. Done.

ACTION CODES:
A — ACCEPTED/CONCUR
D — ACTION DEFERRED
W — WITHDRAWN
N — NON-CONCUR
VE — VE POTENTIAL/VEP ATTACHED

U.S. ARMY ENGINEER DIVISION HUNTSVILLE

DESIGN REVIEW COMMENTS

PROJECT AMC Environmental - Bldg. 24 Interim Remedial Action, DF #5-8, S:10 May 1989

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☐ SAFETY ☐ ADV TECH ☐ ESTIMATING ☐ SPECIFICATIONS
☐ SYSTEMS ENG ☐ VALUE ENG ☐ OTHER

REVIEW Draft Record of Decision
DATE 10 May 1989 TYPE
NAME K. Healy/bjr/5170

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
5.	Section 3.1, Para 2	In the third sentence, change "treatment" to "pre-treatment."	A. Done.
6.	Table 3-1	For the advantages of Alternative 3A, change "reassure cost" to "reasonable cost."	A. Done.
7.	Section 3.2	In the first sentence, verify that the decision to implement the IRA Alternative 3C was made by USACE. Under item 3 of the primary considerations, change "immplementability" to "implementability." Under item 7, change "probability" to "possibility." Additionally, in the final sentence, change "will responsible" to "with responsible," and verify that USACE was responsible for the subject determination.	1) A. Changed to Arsenal Commander. 2) A. Spelling corrected. 3) A. Change made. 4) A. Corrected. 5) A. "USACE" replaced by Arsenal Commander.
8.	Section 4.0	In line 4, change "hydraulicly" to "hydraulically." In the last sentence, verify that "care has been taken... for effective waste management," is true.	1) A. Spelling corrected. 2) A. True statement (GAC air filter, GAC polishing filter; identification of waste streams).
9.	Section 4.1, Para 2	In line 6, change "this remedial action" to "this interim remedial action."	A. Change made.
10.	Section 5.1.1.4, Para 2	Second sentence, clarify that "the expended GAC will be regenerated for reuse" since it was previously stated that the design for this IRA does not assume on-site regeneration and reuse. Finally, in line 6, change "that background" to "than background."	1) A. Wording changed to reflect USACE decision (4 May meeting) to require return to supplier for management. 2) A. Corrected.

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U.S. ARMY ENGINEER DIVISION HUNTSVILLE

DESIGN REVIEW COMMENTS

PROJECT: AMC Environmental - Bldg. 24 Interim Remedial Action, DF #5-8, S:10 May 1989

CORPS OF ENGINEERS

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☐ ENVIR PROT & UTIL | ☐ MFG TECHNOLOGY | ☐ ADV TECH | ☐ VALUE ENG
☐ ARCHITECTURAL | ☐ ELECTRICAL | ☐ ESTIMATING | ☐ OTHER
☐ STRUCTURAL | ☐ INSTR & CONTROLS | ☐ SPECIFICATIONS

REVIEW: Draft Record of Decision
DATE: 10 May 1989 TYPE
NAME: K. Healy/bjr/5170

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
11.	Section 5.1.2, Line 2	Change "from the air" to "from the area."	A. Corrected.
12.	Section 5.2	In line 1, define the "this" that was "selected."	A. "Selected" deleted; replaced with interim remedial action alternative.
		Draft Environmental Assessment	
13.	Section 1.3.2	The discussion presented is not in chronological order. The paragraphs should be re-edited. In paragraph 2, line 7, remove "and nuclear" as per discussions at Picatinny Arsenal meeting on 4 May.	1) A. Paragraphs reedited. 2) A. "Conventional and Nuclear" removed per 4 May meeting direction.
14.	Page 1-10, Para 1	In line 6, correct the spelling of volatilization. In line 7, change "is of minor importance" to "is minor."	1) A. Corrected. 2) A. Done.
15.	Section 2.1, Line 4	Change "the primary source" to "A potential source."	A. Changed.
16.	Section 2.3, Para 3	Verify that "(Bound Brook)" should be "(Green Pond Brook)".	A. Corrected (Author had a flash back to prior project).
17.	Table 3.1	Under "Annual Volume" of "Treated Groundwater," change "mg" to "million gallons" to avoid confusion.	A. Done.
		Final Engineering Feasibility Study	
18.	General	Prior comments to the draft have been satisfactorily addressed. No additional comments are required.	A. Noted.

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HND FORM 7
PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

U.S. ARMY ENGINEER DIVISION HUNTSVILLE

DESIGN REVIEW COMMENTS

CORPS OF ENGINEERS

PROJECT No. PA-024, Interim Remedial Action, Picatinny Arsenal, #5-8, S: 5 May

☐ SITE DEV & GEO TECH ☒ ENVIR PROT & UTIL ☐ ARCHITECTURAL ☐ STRUCTURAL
☐ MECHANICAL ☐ MFG TECHNOLOGY ☐ ELECTRICAL ☐ INSTR & CONTROLS
☐ SAFETY ☐ ADV TECH ☐ ESTIMATING ☐ SPECIFICATIONS
☐ SYSTEMS ENG ☐ VALUE ENG ☐ OTHER

REVIEW Draft ROD & EA, Final Feas. Rpt
DATE 5 May 1989
NAME Gary Holden GH MRW (TYPE)

ITEM	DRAWING NO OR REFERENCE	COMMENT	ACTION
		Draft ROD	
1	Table 2-1	The contaminant levels in this table are different from those listed in Tables 1-2 and 1-3 of the draft specifications and work statements report. Explain.	A. Tables 1-2 and 1-3 of draft ROD reflect unconfined aquifer wells only. Change will be made to Section C document.
2	Par 5.1.1.2	Clearly state that the treatment system will remove VOCs to negligible levels before discharge to the brook.	A. Wording changed.
3	Par 5.2	A word is missing in the second sentence.	A. "Selected" deleted; "interim remedial action alternative" added.
		Draft EA	
4	Table 1-1	See Item 1	A. As noted above.
5	Par 3.1.2	See Item 2	A. As above.
6	Par 3.1.3	State that air quality impact would be negligible with or without the GAC air filter.	A. Done.
		Draft ROD and EA	
7	General	Both reports are directed toward use of alternative 3C. State whether the ROD and EA would change if 3G is selected later. State what those changes would be and what delays would occur in the cleanup process if, after 6 months, we move to 3G. System performance for this "off-the-shelf" technology should be well defined. State whether levels below 5 ppb for VOCs are <u>always</u> attainable. Define "system performance. If the State accepts 3c, it will be on the definite performance of the 3C system. No doubt should be cast on its ability to	D. ERCE has been informed that the Arsenal Commander has ruled out possible use of treated water in drinking water system; hence, discussion of 3G in the ROD would lead to confusion. A. Comments on system performance addressed. Properly maintained and operated, there should be no problem.

ACTION CODES:
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U.S. ARMY ENGINEER DIVISION HUNTSVILLE

DESIGN REVIEW COMMENTS

CORPS OF ENGINEERS

PROJECT No. PA-024, Interim Remedial Action, Picatinny Arsenal, #5-8, S: 5 May

☐ SITE DEV & GEO TECH ☐ MECHANICAL ☐ SAFETY ☐ SYSTEMS ENG
☒ ENVIR PROT & UTIL ☐ MFG TECHNOLOGY ☐ ADV TECH ☐ VALUE ENG
☐ ARCHITECTURAL ☐ ELECTRICAL ☐ ESTIMATING ☐ OTHER
☐ STRUCTURAL ☐ INSTR & CONTROLS ☐ SPECIFICATIONS

REVIEW Draft ROD & EA, Final Feas. Rpt
DATE 5 May 1989 TYPE
NAME Gary Holden

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
7	(Cont'd)	clean groundwater to specified levels. Modify report based on the above. Do not see the reasoning for holding on to 3G.	Reason for holding on to 3G: direction provided to ERCE in 13 April review meeting.
8	General	It is the responsibility of the AE to thoroughly proofread the draft.	A. Agreed.
		<u>Final Feasibility Study</u>	
9	General	No comments.	Noted.

ACTION CODES:
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D — ACTION DEFERRED
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N — NON-CONCUR
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HND FORM 7
(REVISED) 25 MAR 86

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

RESPONSE TO ARDEC COMMENTS OF DRAFT RECORD OF DECISION

	Comment	Response
p. 1-2	3rd paragraph, 5th line. Armaments should not be plural.	Corrected.
p. 1-2	3rd paragraph, 7th line, Picatinny does not produce nuclear munitions, but may develop certain components that go into nuclear munitions.	"Conventional and Nuclear" deleted, per 4 May meeting discussion.
p. 1-2	3rd paragraph, 7th line, the word past should be substituted for the word part.	Corrected.
p. 2-1	Top of page, to prevent contaminated groundwater from entering Green Pond Brook should also be stated as a remedial objective.	ERCE is unaware that the Brook is in need of remediation. A statement was added to indicate that an objective is the prevention or minimization of water quality deterioration.
p. 2-2	Table 2-1, what are the nine shallow wells being used for this table?	Table modified to show well information. Note added to Table 2-1 to list well numbers.
p. 2-2	The listed range for Trichloroethylene does not seen correct, well 9B (#270094) during the stated time frame 1983-85, has quite a few readings over 6241 ppb.	Corrected. The 6241 ppb number, the "average" reading for well 270094 from 1982-1985, was erroneously listed.
p. 2-3	Table 2-1, The Arsenal favors 3C not 3D.	Comments not understood. Table 2-1 does not mention alternatives.
p. 3-3	Table 3-1, No. Title/Description Description of 6A is the same as 3G.	Alternative 6A description corrected.
p. 2-1	1st paragraph last sentence. An additional source could be Building 24 itself, or the closed waste oil tank at Building 31.	Please provide 1) information on Building 31 waste oil tank, and 2) information on how Building 24 itself could be a source. This information was not previously provided.
p. 5-2	The pretreatment sludge will have to be handled as a hazardous waste.	Handling of the pretreatment sludge should be determined based on waste characteristics. Currently, pretreatment sludge from the Arsenal's drinking water plant is not handled

RESPONSE TO ARDEC COMMENTS OF DRAFT RECORD OF DECISION
(continued)

	Comment	Response
		as a hazardous waste, although the water source is contaminated with VOCs. NJDEP or EPA has not yet provided specific guidance on this issue.
p. 5-2	2nd to last sentence, missing stripper after air.	Corrected.

PICATINNY ARSENAL
RESPONSIVENESS SUMMARY

A. OVERVIEW

The U.S. Army has elected to pump and treat the contaminated groundwater plume emanating from the Building 24 area. The contaminant of concern, trichloroethylene (TCE), results from past plating operations in this area. TCE, a volatile organic compound which is easily removed by exposure to air, is a degreasing agent commonly used in the metal working industry to remove residual oils and grease prior to plating. It is also used in the dry cleaning industry and as a solvent in chemical and pharmaceutical manufacturing.

The chosen alternative consists of intercepting the plume through five (5) withdrawal wells to be installed between Building 24 and Green Pond Brook. The contaminated water will pass through a three stage process where it will be treated for removal of heavy metals, passed through an air stripper to remove the volatile constituents (outfitted with a granulated activated carbon (GAC) air filter for off-gases), and finally through two (2) GAC units to remove any residual volatile contaminants prior to release to Green Pond Brook.

Based on the public response during the comment period, opposition to the chosen alternative will not be of concern.

B. BACKGROUND ON COMMUNITY INVOLVEMENT

In 1985, Picatinny Arsenal held a detailed press conference to announce that significant levels of volatile organics and heavy metals had been found near Building 24 at Picatinny Arsenal and that cleanup plans would be prepared later in the year. This announcement generated little public and community interest at the time.

Community interest in the contaminated site began to increase in 1987, particularly among on-post residents and employees, when a local newspaper, the "Daily Record", published an in-depth series of articles about the installation's RCRA and CERCLA problems. The series focused attention on this and other sites as well as the possibility that the contamination could migrate beyond the installation's boundaries. In spite of assurances from Army and U.S. Geological Survey officials that the contamination was confined to the Arsenal, community officials from the six municipalities surrounding Picatinny expressed concern and interest in being given more information about the site.

In May 1988, a survey of the community was conducted by the U.S. Army Toxic and Hazardous Material Agency (USATHAMA). The purpose of the community interviews was to identify attitudes and concerns in regard to the environmental studies at Picatinny Arsenal. The interviews included on-post residents and employees as well as installation neighbors, local officials and public health administrators. the main concern involved the quality of drinking water. All questions and concerns were addressed at the time of the interview or immediately after. An overview of the concerns is presented below.

Q1: Picatinny Arsenal residents expressed concern and in some cases believed that the installation's drinking water supply is contaminated.

A1: To meet stricter state standards and to alleviate any possibility of future contamination of the water supply, Picatinny built a new water treatment plant that removes volatile organics and heavy metals. Additionally, in the early 1980's, the installation began holding quarterly town meetings to answer questions and complaints and provide bi-weekly water sampling results to residents. These meetings continue today.

Q2: Municipal officials and representatives expressed concern that contamination was migrating beyond the installation boundary.

A2: In July 1989, Picatinny provided water sampling results taken at the boundary to municipal health officials. The results are currently being confirmed. The arsenal also tested 13 off-post residential wells in June 1988 and 1989 and provided the results to the municipal health official in which the wells are located. No contamination was found in either sampling event. Additionally, the site was discussed in-depth by the Technical Review Committee in April 1989.

Comments received at the September 25, 1989 meeting are included as an addendum.

C. SUMMARY OF COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

The proposed remedial action plan (PRAP) was published in several newspapers on July 12, 1989. The public comment period expired on August 14, 1989; comments are addressed below.

Q1: What is the contaminant in Green Pond Brook?

A1: Trichloroethylene (TCE) is the contaminant of concern in Green Pond Brook. Although usually not detected during sampling, investigations have occasionally detected TCE below the National primary drinking water standard, maximum contaminant level (MCL) of 5 ppb, generally between 1 and 3 ppb.

Q2: Can it get into Mt. Hope Pond?

A2: No, because Mt. Hope Pond is about 300 feet higher in elevation than Green Pond Brook and Mt. Hope Pond is not in the same aquifer or watershed. Groundwater flow is not in the direction of Mt. Hope Pond, rather it discharges towards Green Pond Brook which is approximately 2 miles from Mt. Hope Pond.

Q3: How will it affect the mine shafts below Mt. Hope quarry?

A3: No effect is possible in the mine shafts because the Pre-Cambrian rock in which the shafts occur is not connected to the glacial aquifer in which the contamination on the Arsenal is found. The mine shafts are approximately 3 miles uphill from the discharge area.

Q4: Excerpt from letter dated July 25, 1989: "Whereas "alternatives four through six" are stated as being expected to meet all the discharge limitations set by EPA and DEP, the fact that Green Pond Brook is a source of potable water leads to concern should the treated water be discharged into Green Pond Brook.

We believe that a more prudent arrangement would be to implement a variation of "alternative five" but utilizing the treated water as "gray water", of which considerable quantities are used in your facilities, instead of utilizing the treated water as a raw water source for the drinking water treatment system."

A4: The treated water being discharged into Green Pond Brook will have passed through three stages: a filtration system to remove metals, an air stripper to remove the TCE and other volatile organic compounds (VOCs) and two activated carbon filters to remove any residual VOCs before being discharged into the brook. The discharge water will be of higher quality than what is presently flowing through the Brook.

Q5: GAC vendors should be informed of RCRA hazardous waste regulations that must be followed. Picatinny Arsenal should specify how the sludge and stripper wastes are to be stored. If storage will be in containers, a short description of the storage area and estimated frequency of waste removal (and other information relating to waste handling) should be included.

A5: Sludge and stripper waste will be stored at the site at either a 90-day RCRA (Resource Conservation and Recovery Act) storage area or a State approved interim storage area. All waste shall be removed from the 90-day storage area as soon as possible and in compliance with ARDEC 420-47 (Hazardous Waste Management Plan). This Plan is in conformance with all RCRA hazardous waste regulations. All waste will be disposed of in accordance with RCRA hazardous waste regulations.

Q6: A 500 year floodplain and wetlands as defined by FEMA exist in the area at or near the proposed ground water extraction and treatment system. Pursuant to Executive Order 11990 (OSWER Directive #9280.0-2) and Executive Order 11988 (OSWER Directive #9280.0-2) a wetlands and floodplains assessment (which can be combined) must be conducted to evaluate the effects of the proposed remedial action. The wetlands issue may not be pertinent if the extraction and treatment system will be located at the golf course. The purpose of the floodplains assessment is essentially to make Picatinny aware that precautions should be made if construction of a treatment system will be in an area prone to flooding. These issues may be addressed during the Record of Decision stage or the Remedial Design/Remedial Action stage (RD/RA).

A6: The potential for affecting wetlands has been considered. However, the pertinence of such a concern is questionable. The positioning of the treatment system at the golf course will, as suggested, preclude any effects on distant wetlands.

Potential flooding has been addressed although application of the 500 year floodplain criteria appears excessive. Picatinny Arsenal personnel are well aware of localized flooding conditions. The placement of the treatment unit accounts for such conditions. In addition, we intend the treatment unit to mitigate the possible effects of flooding. EPA and NJDEP will have the opportunity to review and comment on these design plans. The treatment unit is designed to be temporary.

Q7: Picatinny Arsenal should contact the U.S. Fish and Wildlife Service to determine whether there is a possibility of encountering federal endangered/threatened bird species in the vicinity of the Site. While we do not expect that the proposed remedial activity will have a detrimental impact on these species because of their transitory nature, informal consultation should be conducted to comply with the Endangered Species Act.

A7: Off-gases from the stripper will be treated through use of a GAC filter. The resultant effluent will meet air discharge limits. This, in addition to the transitory nature of species, will preclude any detrimental impact on any bird species. The Fish and Wildlife Service will be contacted prior to construction to confirm the above statements.

Q8: The proposed action should be reviewed for compliance with the National Historic Preservation Act (NHPA). Cultural resource surveys have been prepared for Picatinny Arsenal and should be available to help determine whether the project will impact sites on or eligible for nomination to the National Register of Historic Places.

A8: The proposed action has been reviewed for compliance with the National Historic Preservation Act. All historic sites located at Picatinny Arsenal have been recorded in accordance with the Historic American Building Survey/Historic American Engineering Record (HABS/HAER). Building 39 and the Cannon Gates are in the vicinity where the action will take place. Building 39 has been rated as a Category 3 and Cannon Gates Category 2. No impact to these areas is anticipated.

DEPARTMENT OF THE ARMY

US ARMY TOXIC AND HAZARDOUS MATERIALS AGENCY

ABERDEEN PROVING GROUND MARYLAND 21010-5401

REPLY TO ATTENTION OF

CETHA-IR-B (50-6c)

8 SEP 1989

MEMORANDUM FOR Commander, U.S. Army Engineer Division, Huntsville, ATTN: CEHND-ED-PM (Mr. Walt Perro), P.O. Box 1600, Huntsville, AL 35807-4301

SUBJECT: Picatinny Arsenal Interim Remedial Action Effluent Limitations and Monitoring Requirements

1. Recommend the enclosed effluent limitations and monitoring requirements provided by the New Jersey Department of Environmental Protection be issued as an addendum to the "Record of Decision for Interim Groundwater Remediation Plan, Picatinny Arsenal, New Jersey," prepared by ERC Environmental and Energy Services Company, May 1989.

2. Point of contact for this Agency is Ms. Roxann Moran, AUTOVON 584-3240, or commercial (301) 671-3240.

FOR THE COMMANDER:

Encl

ROBERT S. METZGER II
LTC, CM
Deputy
Installation Restoration Division

1.A EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge treated ground water into Green Pond Brook from the treatment system. There shall be no discharge of floating solids or visible foam in other than trace amounts. There shall be no visible sheen.

The abbreviation 'N/A', in the table below denotes 'Not Applicable' while the abbreviation 'NL', denotes 'Not Limited' with both monitoring and reporting required.

Samples taken in compliance with the specified monitoring requirements shall be taken at the discharge from the treatment system, and shall be reported monthly.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS *			MONITORING REQUIREMENTS	
All units are in ug/l unless otherwise specified	Daily Minimum	Monthly Average	Daily Maximum	Frequency	Sample type
Flow (MGD)	N/A	NL	0.216	Monthly	Instantaneous
pH (Standard Units)	6.0	N/A	9.0	Monthly	Grab
Total Suspended Solids, mg/l	N/A	NL	88	Monthly	Grab
Chemical Oxygen Demand, mg/l	N/A	NL	50	Monthly	Grab
Oil & Grease, mg/l	N/A	10	15	Monthly	Grab
Cadmium	N/A	NL	22	Weekly	Grab
Chromium	N/A	NL	110	Weekly	Grab
Lead	N/A	NL	110	Weekly	Grab
Selenium	N/A	NL	22	Weekly	Grab
Arsenic	N/A	NL	110	Weekly	Grab
Copper	N/A	NL	7.0	Weekly	Grab
Zinc	N/A	NL	56	Weekly	Grab
Benzene	N/A	NL	50	Weekly	Grab
Chloroform	N/A	111	325	Weekly	Grab
1,1-Dichloroethylene	N/A	22	60	Weekly	Grab
1,2-trans Dichloroethylene	N/A	25	66	Weekly	Grab
Methylene Chloride	N/A	36	170	Weekly	Grab
Tetrachloroethylene	N/A	52	164	Weekly	Grab
Toluene	N/A	NL	50	Weekly	Grab
Trichloroethylene	N/A	26	69	Weekly	Grab

P.3/5

1.A EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

EFFLUENT CHARACTERISTIC All units are in ug/l unless otherwise specified	DISCHARGE LIMITATIONS * Daily Minimum	Monthly Average	Daily Maximum	MONITORING REQUIREME Frequency	Sample ty
1,1,1-Trichloroethane	N/A	22	59	Weekly	Grab
1,1-Dichloroethane	N/A	22	59	Weekly	Grab
Phenols	N/A	19	47	Weekly	Grab
Organic Toxic Pollutants (Volatiles Only)	N/A	NL	100	Weekly	Grab
Acute Toxicity	LC50≥50%	N/A	N/A	See Page 3 of 7 Page	
Chronic Toxicity	NOEC≥46%	N/A	N/A	See Page 3 of 7 Page	

* Predicated upon discharge through a submerged high-rate diffuser. After receipt of background dat the effluent limitations may be modified to reflect more appropriate limitations.

AUG 29 '89 14:03 FIGATIONS APPEAL NO